

**Defense Information Infrastructure (DII)  
Common Operating Environment (COE)**

**Software Version Description (SVD)  
for the  
Grid Field Database (MDGRID) Segment  
of the  
Tactical Environmental Support System Next Century  
[TESS(NC)]  
Meteorology and Oceanography (METOC) Database**

**Document Version 4.5**

**1 March 1999**

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## Table of Contents

<b>1</b>	<b>SCOPE .....</b>	<b>1</b>
<b>1.1</b>	<b>Identification.....</b>	<b>1</b>
<b>1.2</b>	<b>System Overview .....</b>	<b>1</b>
<b>1.3</b>	<b>Product Information .....</b>	<b>4</b>
1.3.1	Product Qualification .....	4
1.3.2	Product Restrictions .....	4
1.3.3	Product Dependencies .....	4
<b>2</b>	<b>REFERENCED DOCUMENTS .....</b>	<b>5</b>
<b>2.1</b>	<b>Government Documents .....</b>	<b>5</b>
<b>2.2</b>	<b>Non-Government Documents .....</b>	<b>5</b>
<b>3</b>	<b>VERSION DESCRIPTION .....</b>	<b>6</b>
<b>3.1</b>	<b>Inventory of Materials Released .....</b>	<b>6</b>
<b>3.2</b>	<b>Inventory of Software Contents .....</b>	<b>6</b>
<b>3.3</b>	<b>Changes Installed .....</b>	<b>6</b>
<b>3.4</b>	<b>Waivers.....</b>	<b>6</b>
<b>3.5</b>	<b>Adaptation Data .....</b>	<b>6</b>
<b>3.6</b>	<b>Installation Instructions.....</b>	<b>6</b>
<b>3.7</b>	<b>Possible Problems and Known Errors .....</b>	<b>6</b>
<b>4</b>	<b>NOTES.....</b>	<b>7</b>
<b>4.1</b>	<b>Glossary of Acronyms .....</b>	<b>7</b>
<b>Appendix A - List of Executables and Environment Files .....</b>		<b>A-1</b>
<b>Appendix B - Changes/Updates Since Preliminary Release.....</b>		<b>B-1</b>
<b>Appendix C - Known Problems and Errors .....</b>		<b>C-1</b>

## List of Figures

1-1	TESS(NC) METOC Database Conceptual Organization.....	3
-----	--	---

# 1 SCOPE

## 1.1 Identification

This Software Version Description (SVD) describes the Grid Field Database (MDGRID) segment, Version 4.2.2.0, of the Tactical Environmental Support System Next Century [TESS(NC)] Meteorology and Oceanography (METOC) Database. The MDGRID is a Defense Information Infrastructure (DII) Common Operating Environment (COE) *shared database* segment for the storage of grid field data. This software is designed to run under DII COE release 3.1 on a Hewlett-Packard computer running HP-UX 10.20.

## 1.2 System Overview

The software described in this document forms a portion of the METOC Database component of the TESS(NC) Program (Navy Integrated Tactical Environmental Subsystem (NITES) Version I). On 29 October 1996, the Oceanographer of the Navy issued a TESS Program Policy statement in letter 3140 Serial 961/6U570953, modifying the Program by calling for five seamless software versions that are DII COE compliant, preferably to level 5.

The five versions are:

- NITES Version I      The local data fusion center and principal METOC analysis and forecast system (TESS(NC))
- NITES Version II     The subsystem on the Joint Maritime Command Information System (JMCIS) or Global Command and Control System (GCCS) (NITES/Joint METOC Segment (JMS))
- NITES Version III    The unclassified aviation forecast, briefing, and display subsystem tailored to Naval METOC shore activities (currently satisfied by the Meteorological Integrated Data Display System (MIDDS))
- NITES Version IV     The Portable subsystem composed of independent Personal Computers (PCs)/workstations and modules for forecaster, satellite, communications, and Integrated Command, Control, Communications, Computer, and Intelligence Surveillance Reconnaissance (IC4ISR) functions (currently the Interim Mobile Oceanographic Support System (IMOSS))
- NITES Version V      Foreign Military Sales (currently satisfied by the Allied Environmental Support System (AESS))

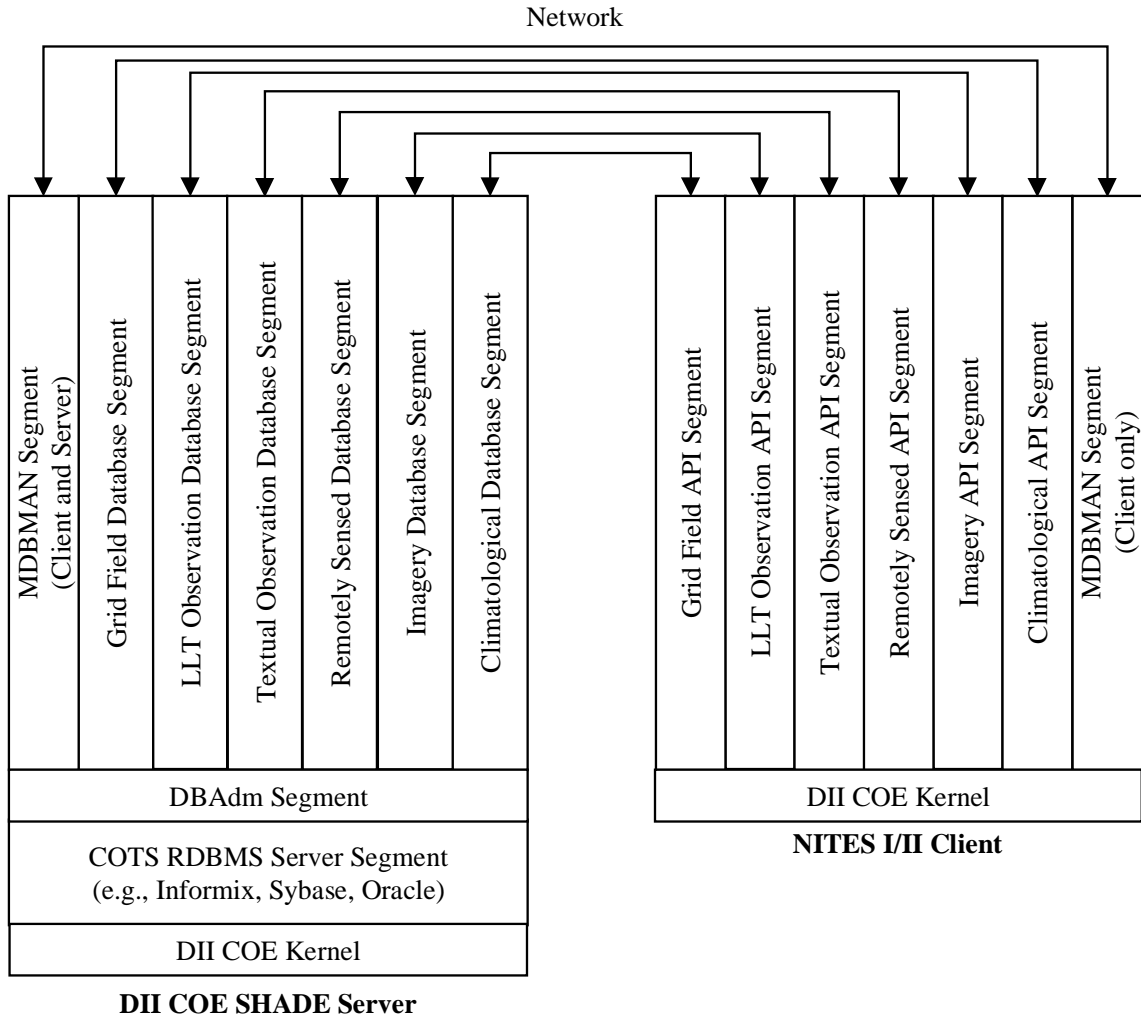
NITES I acquires and assimilates various METOC data for use by US Navy and Marine Corps weather forecasters and tactical planners. NITES I provides these users with METOC data, products, and applications necessary to support the warfighter in tactical operations and decision making. NITES I provides METOC data and products to NITES I and II applications, as well as non-TESS(NC) systems requiring METOC data, in a heterogeneous, networked computing environment.

The TESS(NC) Concept of Operations and system architecture require that the METOC Database be distributed both in terms of application access to METOC data and products and in terms of physical location of the data repositories. The organizational structure of the database is influenced by these requirements, and the components of this distributed database are described below.

In accordance with DII COE database concepts, the METOC Database is composed of six DII COE-compliant *shared database* segments. Associated with each shared database segment is an Application Program Interface (API) segment. The segments are arranged by data type as follows:

<b><u>Data Type</u></b>	<b><u>Data Segment</u></b>	<b><u>API Segment</u></b>
Grid Fields	MDGRID	MAGRID
Latitude-Longitude-Time (LLT) Observations	MDLLT	MALLT
Textual Observations and Bulletins	MDTXT	MATXT
Remotely Sensed Data	MDREM	MAREM
Imagery	MDIMG	MAIMG
Climatology Data	MDCLIM	MACLIM

A typical client-server installation is depicted in Figure 1-1 on the next page. This shows the shared database segments residing on a DII COE SHADE database server, with a NITES I or II client machine hosting the API segments. Communication between API segments and shared database segments is accomplished over the network using American National Standards Institute (ANSI)-standard Structured Query Language (SQL).



**Figure 1-1. TESS(NC) METOC Database Conceptual Organization**

The MDGRID segment deals with gridded METOC datasets. These fields provide forecasters with validation information for various atmospheric and oceanographic parameters. A dataset represents a logical collection of discrete grid field data records. The grid data records are logically organized with each other by grid model type and basetime. A grid data record contains descriptive information (element, level, forecast period, etc.) and the actual grid values.

## **1.3 Product Information**

### **1.3.1 Product Qualification**

Test and Evaluation (T&E) of the software was performed at the Integrated Performance Decisions (IPD) facility in Middletown, RI, prior to delivery of the software.

### **1.3.2 Product Restrictions**

IPD's intellectual property rights to deliverables defined in this document are covered by the copyright license under the clause in DFARS 252.227-7013 (Nov. 1995).

### **1.3.3 Product Dependencies**

The MDGRID segment is hosted on the following hardware:

- Tactical Advanced Computer, TAC-3 (HP 750/755)/TAC-4 (HP J210)

The operating system requirements are:

- TAC-3/TAC-4: HP-UX 10.20

The kernel requirements are:

- Kernel 3.0.1.0 with patches through P4

The following software must be properly installed prior to loading the MDGRID segment:

- Appropriate operating system (as described above)
- Appropriate DII COE Kernel (as described above)
- DII COE Informix Connect Segment (INFXCN), version 1.0.1.0

## **2 REFERENCED DOCUMENTS**

### **2.1 Government Documents**

- |  |  |
|--|--|
| Unnumbered<br>30 September 1997          | <i>Database Design Description for the Tactical Environmental Support System/Next Century [TESS(NC)] Meteorological and Oceanographic (METOC) Database, Space and Naval Warfare Systems Command, Environmental Systems Program Office (SPAWAR PMW-185), Washington, DC</i> |
| ipd4400mdgridipTES-10<br>29 January 1999 | <i>Installation Procedures (IP) for the Grid Field Database (MDGRID) Segment of the Tactical Environmental Support System Next Century [TESS(NC)] Meteorology and Oceanography (METOC) Database</i>  |

### **2.2 Non-Government Documents**

None.

## **3 VERSION DESCRIPTION**

### **3.1 Inventory of Materials Released**

All physical media and associated documentation for the MDGRID segment are listed below.

- MDGRID segment v4.2.2.0 (HP-UX) Installation Tape (4-mm Digital Audio Tape (DAT) cartridge for TAC-3/TAC-4 hardware)
- MDGRID segment v4.5 SVD, dated 1 March 1999.

### **3.2 Inventory of Software Contents**

A list of all executables and environment files delivered is contained in Appendix A of this document.

### **3.3 Changes Installed**

A list of changes installed since the Preliminary (Developer) Release of the MDGRID software is contained in Appendix B of this document.

### **3.4 Waivers**

There are no waivers associated with this software.

### **3.5 Adaptation Data**

There are no unique-to-site data contained in the MDGRID 4.2.2.0 release.

### **3.6 Installation Instructions**

The MDGRID segment v4.2 series Installation Procedures referenced in Section 2 of this document provide comprehensive installation instructions for the MDGRID segment. The fully installed segment occupies approximately 170 KB of disk space. The software requires a minimum of 128 MB of RAM, with 192 MB recommended.

### **3.7 Possible Problems and Known Errors**

Known problems and errors with MDGRID software are listed in Appendix C of this document.

## **4 NOTES**

### **4.1 Glossary of Acronyms**

AESS	Allied Environmental Support System
ANSI	American National Standards Institute
API	Application Program Interface
COE	Common Operating Environment
DAT	Digital Audio Tape
DII	Defense Information Infrastructure
GCCS	Global Command and Control System
IC4ISR	Integrated Command, Control, Communications, Computer, and Intelligence Surveillance Reconnaissance
IMOSS	Interim Mobile Oceanographic Support System
INFXCN	Informix Connect Segment
IP	Installation Procedures
IPD	Integrated Performance Decisions
JMCIS	Joint Maritime Command Information System
JMS	Joint METOC Segment
LLT	Latitude-Longitude-Time
MDGRID	Grid Field Database Segment of the TESS(NC) METOC Database
METOC	Meteorological and Oceanographic
MIDDS	Meteorological Integrated Data Display System
NITES	Navy Integrated Tactical Environmental System
PC	Personal Computer
PTR	Program Trouble Report

SQL	Structured Query Language
SVD	Software Version Description
T&E	Test and Evaluation
TESS(NC)	Tactical Environmental Support System Next Century

## Appendix A - List of Executables and Environment Files

### A.1 File Structure for HP-UX Delivery

```

total 12
drwxr-xr-x 3 sysadmin COE 1024 Feb 25 20:36 install
drwxr-xr-x 2 sysadmin COE 1024 Feb 25 20:36 data
drwxr-xr-x 2 sysadmin COE 1024 Feb 25 20:36 bin
drwxr-xr-x 2 272 COE 1024 Feb 26 15:21 SegDescrip
drwxr-xr-x 2 sysadmin COE 1024 Feb 25 20:36 Scripts
drwxrwxr-x 2 272 COE 1024 Feb 25 20:36 Integ

MDGRID/install:
total 12
drwxr-xr-x 2 sysadmin COE 1024 Feb 25 20:36 sql
-r-xr-xr-x 1 sysadmin COE 3288 Feb 25 18:02 install_mdgrid
-r-xr-xr-x 1 sysadmin COE 552 Feb 25 18:02 deinstall_mdgrid

MDGRID/install/sql:
total 106
-rw-r--r-- 1 sysadmin COE 11 Feb 25 18:02 mdgrid_drop_file_inf
-rw-r--r-- 1 sysadmin COE 18 Feb 25 20:38 mdgrid_create_file_inf
-rw-r--r-- 1 sysadmin COE 23 Feb 25 20:38 mdgrid_create_blob_inf
-r-xr-xr-x 1 sysadmin COE 2734 Feb 25 18:02 mdgrid_cds_scripts
-r-xr-xr-x 1 sysadmin COE 1745 Feb 25 18:02 MDGRID_Units_scripts
-r--r--r-- 1 sysadmin COE 84 Feb 25 18:02 MDGRID_Units.cmd
-r-xr-xr-x 1 sysadmin COE 2150 Feb 25 18:02 MDGRID_Spherical_scripts
-r--r--r-- 1 sysadmin COE 92 Feb 25 18:02 MDGRID_Spherical.cmd
-r-xr-xr-x 1 sysadmin COE 2180 Feb 25 18:02 MDGRID_SiteParms_scripts
-r--r--r-- 1 sysadmin COE 92 Feb 25 18:02 MDGRID_SiteParms.cmd
-r-xr-xr-x 1 sysadmin COE 3547 Feb 25 18:02 MDGRID_Registrtions_scripts
-r--r--r-- 1 sysadmin COE 99 Feb 25 18:02 MDGRID_Registrtions.cmd
-r-xr-xr-x 1 sysadmin COE 1855 Feb 25 18:02 MDGRID_ProdCenters_scripts
-r--r--r-- 1 sysadmin COE 96 Feb 25 18:02 MDGRID_ProdCenters.cmd
-r-xr-xr-x 1 sysadmin COE 2173 Feb 25 18:02 MDGRID_PolarStero_scripts
-r-xr-xr-x 1 sysadmin COE 2082 Feb 25 18:02 MDGRID_Models_scripts
-r--r--r-- 1 sysadmin COE 86 Feb 25 18:02 MDGRID_Models.cmd
-r-xr-xr-x 1 sysadmin COE 2078 Feb 25 18:02 MDGRID_LinearConv_scripts
-r--r--r-- 1 sysadmin COE 94 Feb 25 18:02 MDGRID_LinearConv.cmd
-r-xr-xr-x 1 sysadmin COE 2320 Feb 25 18:02 MDGRID_LambMerc_scripts
-r--r--r-- 1 sysadmin COE 90 Feb 25 18:02 MDGRID_LambMerc.cmd
-r-xr-xr-x 1 sysadmin COE 1936 Feb 25 18:02 MDGRID_GeoPhysParms_scripts
-r--r--r-- 1 sysadmin COE 98 Feb 25 18:02 MDGRID_GeoPhysParms.cmd
-r-xr-xr-x 1 sysadmin COE 2153 Feb 25 18:02 MDGRID_DatasetDir_scripts
-r-xr-xr-x 1 sysadmin COE 2172 Feb 25 18:02 MDGRID_AOIs_scripts
-r--r--r-- 1 sysadmin COE 82 Feb 25 18:02 MDGRID_AOIs.cmd
-r-xr-xr-x 1 sysadmin COE 2159 Feb 25 18:02 MDGRID_3DDatasetDir_scripts

MDGRID/data:
total 80
-r--r--r-- 1 sysadmin COE 6378 Feb 25 18:02 MDGRID_Units.txt
-r--r--r-- 1 sysadmin COE 144 Feb 25 18:02 MDGRID_Spherical.txt
-r--r--r-- 1 sysadmin COE 8259 Feb 25 18:02 MDGRID_SiteParms.txt
-r--r--r-- 1 sysadmin COE 658 Feb 25 18:02 MDGRID_Registrtions.txt
-r--r--r-- 1 sysadmin COE 1780 Feb 25 18:02 MDGRID_ProdCenters.txt
-r--r--r-- 1 sysadmin COE 416 Feb 25 18:02 MDGRID_Models.txt
-r--r--r-- 1 sysadmin COE 11834 Feb 25 18:02 MDGRID_LinearConv.txt

```

```
-r--r--r-- 1 sysadmin COE 5932 Feb 25 18:02 MDGRID_GeoPhysParms.txt
-r--r--r-- 1 sysadmin COE 286 Feb 25 18:02 MDGRID_AOIs.txt
```

MDGRID/bin:

total 14

```
-r-xr-xr-x 1 sysadmin COE 1336 Feb 25 18:02 MDGRIDGetDBSize
-r-xr-xr-x 1 sysadmin COE 1437 Feb 25 18:02 MDGRIDDropBlob
-r-xr-xr-x 1 sysadmin COE 2618 Feb 25 18:02 MDGRIDCreateBlob
```

MDGRID/SegDescrip:

total 24

```
-rw-rw-rw- 1 root COE 125 Feb 25 18:04 Validated
-rw-r--r-- 1 272 COE 26 Feb 25 18:04 VERSION
-rw-r--r-- 1 272 COE 300 Feb 25 18:04 SegName
-rw-r--r-- 1 272 COE 285 Feb 25 18:04 SegInfo
-rw-r--r-- 1 272 COE 409 Feb 25 18:04 ReleaseNotes
-rwxr-xr-x 1 272 COE 2118 Feb 25 18:04 PostInstall
-rw-rw-rw- 1 root other 137 Feb 25 20:39 Installed
-rw-rw-r-- 1 272 COE 1883 Feb 25 18:03 FileAttribs
-rwxr-xr-x 1 272 COE 776 Feb 25 18:04 DEINSTALL
```

MDGRID/Scripts:

total 0

MDGRID/Integ:

total 2

```
-rw-rw-r-- 1 272 COE 753 Feb 25 18:04 VSOutput
```

## **Appendix B - Changes/Updates Since Preliminary Release**

<b>Pri</b>	<b>PTR #</b>	<b>Summary</b>
	301	Cannot create a blob space greater than 200 mg at install time.
2	92	DII COE requires minimal permission settings for segment directories/files.
2	146	Extended blob spaces not removed on deinstall.
3	65	Extraction of Lambert Grids are not retrieved correctly when subgridding is used.
3	87	Don't use absolute path when creating Blob Space.
3	112	Linear conversion table is incomplete.
3	175	Add new site-specific parameters.
3	201	Improve performance by specifying blob space page size.
3	209	Add Parameters to Site Parameter table.
3	224	Add support for a solar flux grid.
3	302	Add conversion from 940 to 710 (meters to gpm).
3	303	Default units for center 7, subcenter 0, and parameters 215, 216, and 217 were incorrect.
4	174	Receipt time should be represented per grid not dataset.
4	177	NOGAPS model name is specified includes registration information.
4	227	Remove MaxTau from the datasetDir.

## **Appendix C - Known Problems and Errors**

<b>Pri</b>	<b>PTR #</b>	<b>Summary</b>
2	228	Code Review results for MAGRID/MDGRID segments.
4	51	The present DBAdminR tool set does not allow for full DII COE Level 5 compliance due to the database development is limited to the informix.

Detailed Program Trouble Reports (PTRs) are contained on the following pages.

# Program Trouble Report

Report Number: 228

## Originator Information

Author: Denise Reniere  
Site: NP  
Phone: 401-849-5952 ext.3334  
Cross Ref#:

Created: 10/21/98  
Employer:  
E-mail: DReniere

## System Information

Priority	Category	Type	Status
2	Problem, Enhancement	Software	Postponed

## Open Systems

System	Version	Platform	Date
TESS(NC)-GRID	4.2	HPUX 1020 and NT 4.0 (both)	10/21/98

**Modules:** MAGRID,MDGRID

**Module Functions or other Identifying Keywords:**

## Description of the Problem

**One Line Problem Summary:**  
Code Review results for MAGRID/MDGRID segments

**Steps Required to Duplicate the Problem:**

**Repeatable?** Yes                      **Likelihood of Occurrence:**

**Problem Description:**  
This PTR describes areas of deficiency identified during the Code Review process for the MAGRID and MDGRID segments:

Segment compliancy failure issues:

Level 4:

**4-4 :** The segment successfully passes VerifySeg with no errors. Warnings are acceptable but the reason for them must be documented in the IntegNotes file. (we have no errors but are not documenting the warnings)

Level 5:

**5-14:** (NT) The segment creates all its subkeys underneath SegType\SegDirName where SegType is Account Groups, COE, COTS, Patches, Data, or Software, and SegDirName is the segment's directory name. The MAGRID segment is underneath an IPD registry key as opposed to a Software key.

**5-16:** (NT) All segment subkeys are named with the segment prefix. MAGRID has a subkey folder named 4.2.0.0.

**5-5, 5-26,5-27,5-28,5-30, 5-34 and 5-34** - Are all areas of compliancy that the MDGRID fails on, but require COE Tool and DBAdmin tool updates to work. See PTR 51 for details.

Code Review Checklist issues:

General Items:

The segments do not meet level 5 compliancy (see above segment compliancy failure issues)

Static functions and variables is not fully used in the MAGRID segment.

Headers on each routine/function describing functionality, output, input, and return values is not present on all routines.

Foreign keys are not defined in the MDGRID segment. MDGRIDGeoPhysParms, and MDGRIDSiteParms may have a foreign key referencing MDGRIDUnits. MDGRIDRegistrtrions may have a foreign key reference to MDGRIDAOIS.

Database roles have not been identified and defined. (See PTR 51, this is related to segment compliancy issues and current state of segment tools)

**Originator's Recommendation:**

**PTR Assignment (if known)**

**Responsible Engineer(s):**

**Verified By:**

**Date Verified:**

# Program Trouble Report

Report Number: 51

## Originator Information

Author: Jeffrey Landsman  
Site: NP  
Phone: (401) 849-5952 x3362  
Cross Ref#:

Created: 03/29/98  
Employer:  
E-mail: jlandsman

## System Information

Priority	Category	Type	Status
4	Problem	Software	Postponed

## Open Systems

System	Version	Platform	Date
TESS(NC)-GRID	1.0	HPUX 1020	03/29/98
TESS(NC)-LLT	1.0	HPUX 1020	03/29/98
TESS(NC)-TXT	1.0	HPUX 1020	03/29/98

## Modules: MDGRID

MDLLT  
MDTXT

## Module Functions or other Identifying Keywords:

## Description of the Problem

### One Line Problem Summary:

The present DBAdminR tool set does not allow for full DII COE Level 5 compliance due to the database development is limited to the informix.

### Steps Required to Duplicate the Problem:

Repeatable? Yes

Likelihood of Occurrence:

### Problem Description:

The following items have been investigated, looking at the current state of the DBAdmR toolset (and the current limitations) as well as conversations with the technical lead for the DII COE DBAdm Segments. The following Level 5 non-compliance exist:

5 - 26: The DB application installation revokes the owner accounts DBMS login privilege upon successful completion of database installation so that no owner accounts can be used to connect to the database.

5 - 27: Owner accounts are not used to connect to databases except during DB application installation.

5 - 28: Database owner accounts do not have database administrator privileges.

5 - 30: The DB application installation requires the owner account password to be changed upon completion.

5 - 34: Scripts are provided for the DBAs use to add, modify, and remove user privileges. These scripts are documented and the documentation is submitted to the SSA with the segment.

5 - 37: Only the owner and the DBA are able to administer grants.

Items 5 - 26, 5 - 27, 5 - 28, 5 - 30, 5 - 37 are all dealing with the database having an owner that is separate from the DBA (informix). Currently the DBAdmR tool that we use to create the database only creates it with owner informix.

Item 5 - 34: Seems to be related the roles. There are two things stopping us with using roles first we are unsure how the role is going to get granted to a user. Perhaps it is just one of those things where we supply scripts (what this item is discussing) that the DBA must run to give out the privileges (roles). If the DBA doesn't, well... One other issue here is that we are not currently building a database segment, we are telling it that it is a software segment. Section 5.5.9 talks about the database segment descriptor. One of the fields in here is the \$ROLES where we would list our roles. We can't use roles until we install as a database segment.

**Originator's Recommendation:**

Until the DBAdm tool lets us create the database with an owner different than informix we will have problems with some of the level 5 items. Other problems will remain until we can start installing as a database segment.

**PTR Assignment (if known)**

**Responsible Engineer(s):**

NRaD

**Verified By:**

Denise Reniere

**Date Verified:**

03/26/98